D8-397

REVISED FEBRUARY 1966

CATALOG SP-2

For Low Cost — High Production — Fast Assembly

U.S. and foreign patents issued and pending

SpeedSerts®

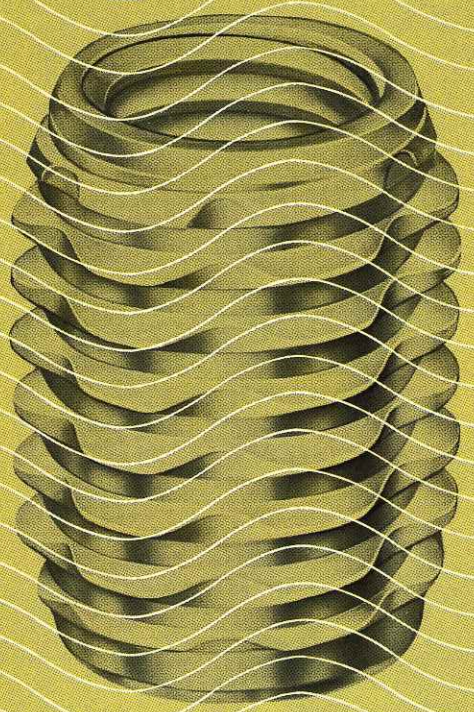
THE NO-CHIP SELF-THREADING INSERTS THAT LOCK THEMSELVES IN

NEWTON INSERT COMPANY

6500 Avalon Blvd., Los Angeles, California 90003
Telephone (213) 753-4271 • TWX (213) 750-2670

SpeedSerts®

. . . the NO-CHIP, SELF-THREADING Inserts



SpeedSerts provide strong, wear-resistant threads in relatively soft materials **without tapping.**

The **wave form threads** extending the entire length of the insert, except for end chamfers, **"roll"** their way with a zero tolerance fit through the base material **without cutting.** This action prevents the formation of chips. Due to the wave crest of the thread, the base material is pushed back gently and then **returns** behind the wave crest to lock the SpeedSerts from backing out. This depression between the wave crests relieves the outward pressure, which, in its absence, would distort the base material. The long wave crests provide substantial shear values that assure high resistance to pull-out forces. The locking action of the wave form threads prevents any loosening that might tend to be caused by vibration.

SpeedSerts are provided with chamfers at both ends, making them easily **installed from either end.** This facilitates hand feeding and simplifies automated arrangements.

Because of the simplicity and ease of installation, the use of SpeedSerts represents **considerable savings in cost.**

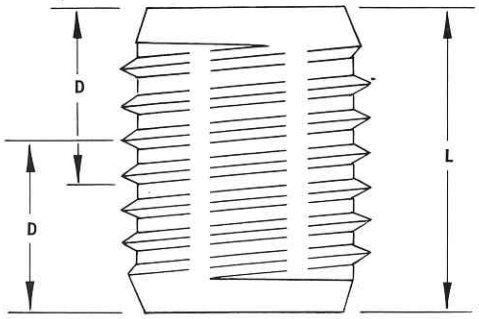
Patents	U.S. and foreign issued and pending.
Standard Materials	Stainless steel (300 series) Brass Steel
Lengths	Standard, medium and short
Internal thread lock	Locking torque values per Table III MIL-N-25027
Finishes	Non-locking Stainless steel . . . passivated Brass . . . natural Steel . . . plated Locking Stainless steel . . . Dry film lubricant, (Dark grey color)

NEW!
for THERMOSET PLASTICS

For application in thermoset plastics use new series with prefix **SPP.** Consult main office or field engineer for recommended hole sizes and test data.

DIMENSIONS

that lock themselves in



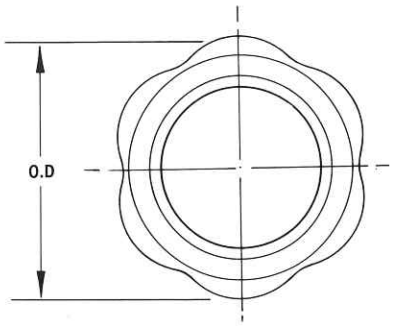


TABLE I

PART NO.	INTERNAL THREAD	O.D. OUTSIDE THREAD DIAMETER	L INSERT LENGTH ±.01			D DISTANCE THROUGH INTERNAL LOCK	
			STANDARD	MEDIUM	SHORT	STANDARD	MEDIUM
0256	2-56	.138	.19	—	—	.12	—
0440	4-40	.172	.23	.19	.16	.15	.13
0632	6-32	.216	.28	.22	.19	.19	.16
0832	8-32	.253	.33	.25	.22	.21	.17
1032 1024	10-32 10-24	.280	.37	.30	.25	.23 .24	.20 .21
428 420	¼-28 ¼-20	.370	.49	.37	.31	.29 .32	.23 .26
524 518	5/16-24 5/16-18	.449	.56	.47	.37	.34 .36	.29 .31
624 616	⅜-24 ⅜-16	.552	.68	.56	.44	.40 .43	.34 .37

To order:	PREFIX TO PART NO.	SUFFIX TO PART NO.	For example:
Lengths: Standard	SP		To order a 4-40 Stainless steel insert, length .23 without internal thread lock... use part No. SP 0440S.
Medium	SPA		
Short	SPB		
Standard Materials:			
Stainless steel 303 series		S	For a 4-40 stainless steel insert, length .19 ... use part No. SPA 0440S.
Brass		BRS	
Steel, zinc plated		U	
Internal thread lock:			
Standard length	SPL		For a 4-40 stainless steel insert, length .19 with internal thread lock... use part No. SPAL 0440S.
Medium length	SPAL		
Short length	not available		

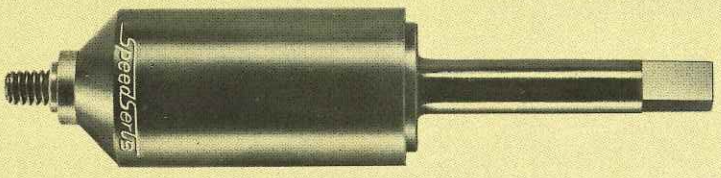
INSTALLATION TOOLS

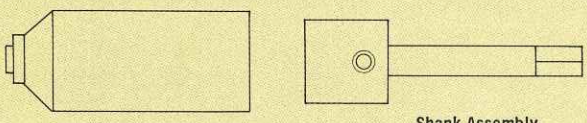
Air Gun

Electric Gun

Please contact our sales engineering organization for assistance on power tool installation procedures.

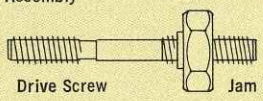
BREAKAWAY POWER TOOL





Cam Housing Assembly

Shank Assembly



Drive Screw

Jam Nut

Should the drivescrew become worn or broken a replacement can be made easily:

1. Remove cam housing assembly.
2. Loosen jam nut.
3. Remove and replace drive screw to required position.

To order complete tool. Prefix SpeedSert part number with TTSP.

For example: For a 10-32 SpeedSert, use a breakaway power tool, part number TTSP1032.

To reorder drive screw. Prefix SpeedSert part number with DSP.

HAND TOOL

To order. Prefix SpeedSert part number with HTSP.

For example: For a 10-32 SpeedSert, use hand tool, part number HTSP1032.

SPECIAL TOOLS FOR NON STANDARD INSTALLATIONS

For installations where standard tools are not functional, tools can be designed using special nose pieces and drive screws. Please consult our sales engineers for assistance on your problem.

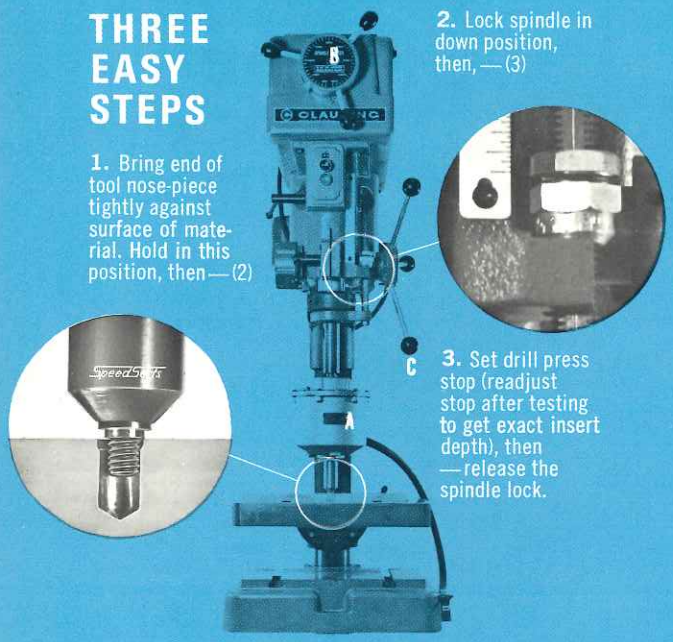
INSTALLATION PROCEDURE

DRILL PRESS INSTALLATION

THREE EASY STEPS

1. Bring end of tool nose-piece tightly against surface of material. Hold in this position, then—(2)

2. Lock spindle in down position, then,—(3)



3. Set drill press stop (readjust stop after testing to get exact insert depth), then —release the spindle lock.

SpeedSerts® may be installed from **either** end

When the set-up is complete, hold the insert so that the **rotating** tool drivescrew will thread into it. Hold the insert by the outer thread until it is snug against the nose-piece.

NOTES:

A. The tapping attachment should be of adequate capacity. In Group A materials a 5/16 (in steel) rating should handle all sizes, and a low speed output tapper of 1:2 to 1:4 will prove satisfactory (#2 Procunier, or equivalent).
In Group B or C materials, the 5/16 tapper will handle the #02, #04, #06, and #08, but in the #10, 1/4, 5/16, and 3/8 sizes, a heavy duty tapper with a 1/2 to 5/8 (in steel) rating and a 1:1 (input to output) ratio is desirable (#3 Procunier or equivalent).
The tapping attachment must be kept in good condition!

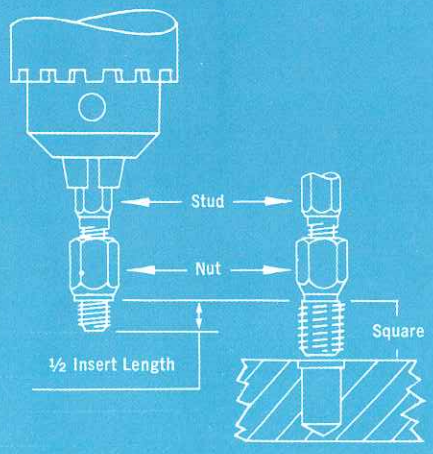
B. The speed of the machine is important. In Group A materials, the tool may rotate as low as 100 RPM, and up to 500 RPM. In Group B or C materials, the 500 speed may be satisfactory for the #02, #04, #06, and even the #08 sizes, but the #10, 1/4, 5/16 and 3/8 sizes should be installed at from 750 to 1200 RPM tool speeds.

C. The handle of the drill press must be advanced firmly and quickly. It is obvious that at the high installation speeds the insert will advance very fast. Any hesitancy in advancing the tool will either cause the insert to ream out the hole, or break the driving screw. If the insert backs out with the installation tool, it may mean that it has been entered too slowly, or with too much force. A few tests will indicate the best procedure.

GENERAL NOTES:

Oil. Do not degrease drilled holes of components prior to installation of SpeedSerts, as the small amount of residual oil from the drilling operation facilitates installation. For installation into cored holes in castings, the use of either a water-soluble or cutting oil will prevent excessive installation torques. Recommended hole sizes and other values shown in this brochure are based on installations into holes not degreased after drilling.
Depth of Installation. Drive in to pre-set depth. Install .01-.03 below surface. .050-.060 for 5/16 and 3/8 sizes.
High Inserts. In the group B and C materials, if an insert has failed to enter to the proper depth, installation should be completed with the hand tool, not the power tool.
To Remove Insert. Use an "Easy Out" type of tool.

HAND TOOL INSTALLATION



Recommended for short runs.(Power tools should be used for high production runs.)

TO INSTALL...

1. Install hand tool in holding device such as drill press chuck or hand tapping fixture, which will assure perpendicular alignment with work.

2. Screw SpeedSerts on **stud** until it contacts **nut.**

3. Install in drilled hole to correct depth.

4. Hold stud against rotation and loosen nut with wrench.

5. Unscrew stud from SpeedSerts.

It is important that installation be square to work surface.

Field repairs...can be made by using the hand tool in conjunction with either a carpenter's brace or a speed wrench.

INSTALLATION DATA

MATERIAL GROUPINGS FOR INSTALLATION

Group A: Soft plastics.

Group B: Cast aluminum, aluminum die castings, cast or wrought magnesium. Hard plastics such as: phenolic or epoxy laminates, acrylics, molded phenolics.

Group C: Hard aluminum alloys such as 2024-T4, 6061-T6, 2014-T6.

TABLE II

Following are drilled installation hole sizes for various materials which permit relatively low-torque installations. The values shown in Tables III and IV are minimum values based on these low-torque installations.
To develop greater pullout and torque out values tests should be conducted with reduced diameter holes. Please consult us for additional information as regards installation procedure, recommended hole sizes and test data.

	GROUP A MATERIALS				GROUP B MATERIALS				GROUP C MATERIALS			
	DRILL*		C'DRILL*		DRILL*		C'DRILL*		DRILL*		C'DRILL*	
PART NO.	DIAM.	MIN. DEPTH	DIAM.	DEPTH ±.01	DIAM.	MIN. DEPTH	DIAM.	DEPTH ±.01	DIAM.	MIN. DEPTH	DIAM.	DEPTH ±.01
0256	.119	.25	.159	.02	.125	.25	.159	.02	.125	.25	.159	.02
0440	.147	.29	.170	.04	.159	.29	.177	.04	.161	.29	.177	.03
0632	.188	.34	.213	.04	.201	.34	.221	.04	.206	.34	.221	.03
0832	.221	.39	.250	.04	.236	.39	.261	.04	.240	.39	.261	.03
1032 1024	.239	.43	.281	.05	.258	.43	.290	.05	.260	.43	.290	.04
428 420	.328	.55	.368	.05	.344	.55	.375	.05	.348	.55	.375	.04
524 518	.399	.62	.468	.05	.413	.62	.468	.05	.421	.62	.468	.05
624 616	.484	.74	.563	.06	.516	.74	.563	.06	.527	.74	.563	.06

*Step drills may be used in place of separate drill and counter drill.

Cored holes: Specifications are available for the following parent materials.
Aluminum die castings
Magnesium die castings
Zinc die castings
Aluminum permanent mold castings
Investment castings — aluminum and magnesium
Plastic moldings

Information available on other types of castings.

Hole sizes: The above dimensions are given as a guide to achieve optimum performance in the various groups of materials. Depending on the parent material being used, you are advised to test, using hole sizes as near as possible to the above dimensions.

TYPICAL INSTALLATION TORQUES IN TYPICAL MATERIALS

TABLE III

PART NO.	SIZE	CYCOLAC (GROUP A HOLE SIZES) INSTALLATION TORQUE	356-T6 ALUM. ALLOY (GROUP B HOLE SIZES) INSTALLATION TORQUE	2024-T4 ALUM. ALLOY (GROUP C HOLE SIZES) INSTALLATION TORQUE
0256	2-56	2.5 IN. LBS.	7.5 IN. LBS.	8 IN. LBS.
0440	4-40	7 IN. LBS.	9 IN. LBS.	9 IN. LBS.
0632	6-32	12 IN. LBS.	16 IN. LBS.	17 IN. LBS.
0832	8-32	13 IN. LBS.	30 IN. LBS.	32 IN. LBS.
1032 1024	10-32 10-24	25 IN. LBS.	40 IN. LBS.	45 IN. LBS.
428 420	1/4-28 1/4-20	30 IN. LBS.	70 IN. LBS.	85 IN. LBS.
524 518	5/16-24 5/16-18	55 IN. LBS.	110 IN. LBS.	140 IN. LBS.
624 616	3/8-24 3/8-16	100 IN. LBS.	180 IN. LBS.	240 IN. LBS.

TYPICAL PULL-OUT STRENGTHS IN TYPICAL MATERIALS

TABLE IV

PART NO.	SIZE	CYCOLAC	356-T6 ALUM. ALLOY	2024-T4 ALUM. ALLOY
0256	2-56	270 LBS.	850 LBS.	900 LBS.
0440	4-40	305 LBS.	1130 LBS.	1235 LBS.
0632	6-32	470 LBS.	1720 LBS.	1840 LBS.
0832	8-32	710 LBS.	2130 LBS.	2260 LBS.
1032 1024	10-32 10-24	950 LBS.	3950 LBS.	4250 LBS.
428 420	1/4-28 1/4-20	1850 LBS.	5400 LBS.	6080 LBS.
524 518	5/16-24 5/16-18	2400 LBS.	8240 LBS.	10,740 LBS.
624 616	3/8-24 3/8-16	3870 LBS.	11,445 LBS.	17,500 LBS.

Data presented in the above Tables III and IV is based on the low-torque installation drilled hole sizes shown in Table II.

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FACTORY ENGINEERS COAST TO COAST

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